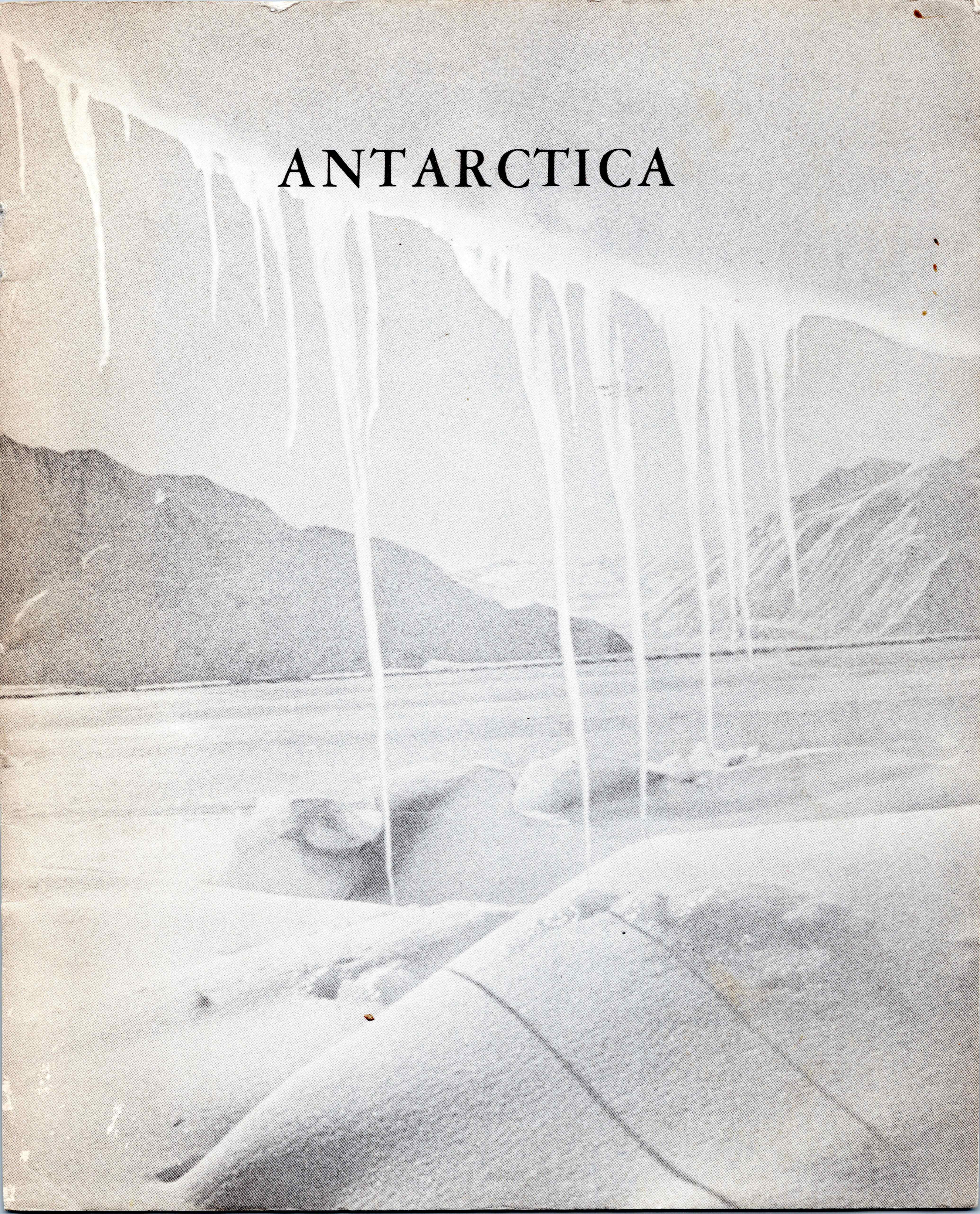
ANTARCTICA



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AUGUST 1984

$6.50

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ANTARCTICA

Antarctica is the coldest, driest and windiest place on Earth. The frozen continent at the bottom of the world is circular, with a long finger-like projection reaching toward the southern tip of South America. This projection is known as the Antarctic Peninsula. The land mass which makes up the continent is slightly larger than the United States and Mexico combined.

Long before the arrival of man on the southermost continent, navigators' minds had conceived the idea of a land mass to the south. The ancient Greeks believed that the continent must exist to balance the land masses of the Northern Hemisphere. Although they never saw it, The Greeks gave it the name Antarctica, which means "the opposite of the Arctic."

Antarctica is covered by more than seven million cubic miles of ice, about 90 percent of the world's fresh water. This ice sheet covers nearly all of the continent. At its thickest point the ice is 15,670 feet deep–almost three miles (4.8 kilometers). It averages 7,000 to 8,000 feet thick (2,123 to 2,426 meters), making Antarctica the world's highest continent in mean altitude. The eastern ice sheet has been there at least 10 million years and rests on land that is mostly above sea level. The smaller western ice sheet is on land that is mostly below sea level.

If the tremendous weight of the ice cap were removed, the continental surface would rise considerably, but not evenly. Some of the land would still be hidden because melting of the ice would raise the level of the sea. No one knows how much the sea level would rise, but 200 feet (61 meters) is a common estimate.

As the ice sheets move toward the edge of the continent, they branch into small glaciers. The glaciers feed into floating ice shelves. These floating ice shelves sometimes cover several thousand square miles and extend downward to a thickness of more than 1,200 feet (366 meters). The Ross Ice Shelf is Antarctica's largest ice shelf and covers an area the size of France.

In spite of the millions of cubic miles of ice, there is almost no precipitation. Antarctica is the worlds' largest and driest desert, averaging less than two inches of snow each year. Once the snow does fall, it is blown about the surface until the flakes are compressed into ice.

Only 4.5% of the continent remains completely ice-free including the Dry Valleys and the Bunger Hills. These areas are located near the coast and in the Trans-Antarctic Mountains. The mountains, which extend from the northern tip of the Antarctic Peninsula through the continent's interior, reach heights of 13,950 feet (4,650 meters).

Another unique feature of the Antarctic is its winds which have incredible velocity. Known as Katabatic winds, they often exceed hurricane force. The winds are formed by the continent's topography as cooler air rushes down the sloping lands towards the coastal area. At Commonwealth Bay, the windiest place on earth, winds have been recorded in excess of 200 miles (320 kilometers) an hour.

Other weather conditions, known as "Herbies" and "White-outs", have plagued Antarctic explorers since they first visited the continent. Herbies are created when fierce winds blow snow or large ice crystals through the atmosphere obscuring vision to less than 100 feet. White-outs occur when the sky and surface assume a uniform whiteness blurring the horizon. When these meteorological phenomena occur, objects become poorly defined with little or no contrast. Travellers can become completely disoriented even as they move from one camp structure to the next, and aviation and other operations become extremely hazardous.

The cold is intense. The lowest termperature on earth, -88.3° C. or -126.9° F. was recorded at the Soviet Union's Vostok Station. On a "warm" summer day, the temperature on the polar plateau might soar upward to 0° C. or 32° F. One of the main dangers in Antarctica is that a person is unaware of the intensity of the coldness because of the extreme lack of moisture.

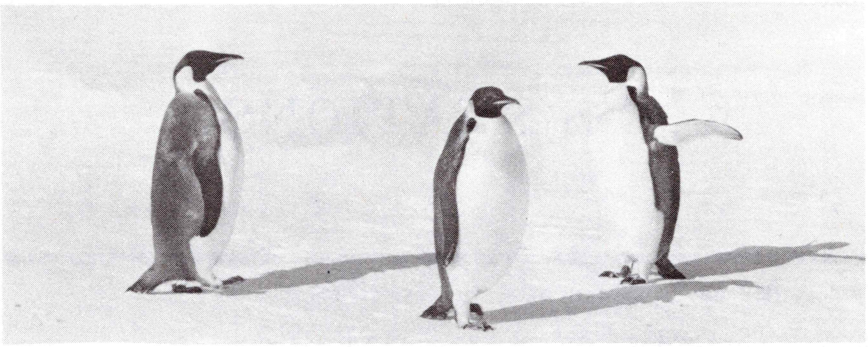
ANIMAL LIFE

Life in Antarctica is abundant. Several varieties of birds, including Antarctica's first citizen - - the penguin - - make the continent their home.

Two members of the penguin family that can be seen in the vicinity of McMurdo Station are the Adelies and the Emperors. While the Adelie reaches a height of only 18 inches, the Emperor will grow to three feet and weight up to 60 pounds.

Many types of whales, seals and fish and a variety of microscopic organisms flourish.

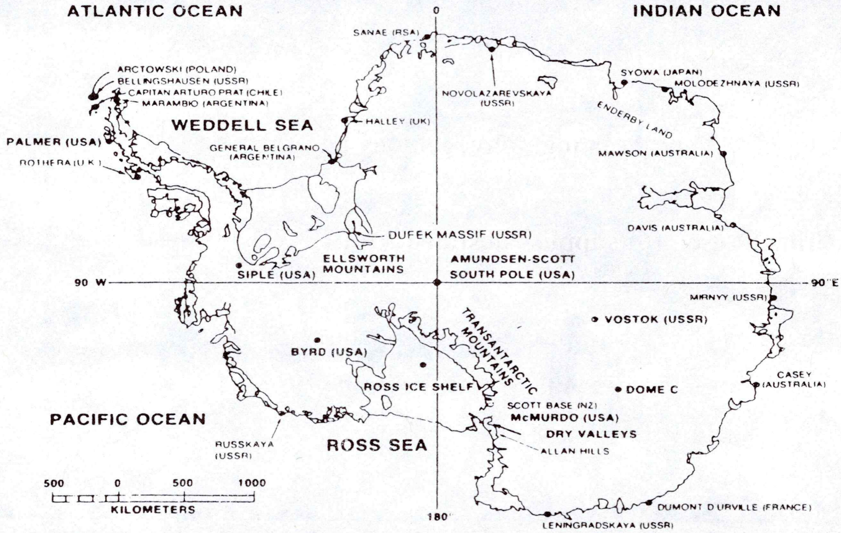
Salt-free ice and the abundance of potential food resources in Antarctic waters could someday be an answer to dwindling food and fresh water supplies for an increasing world population.

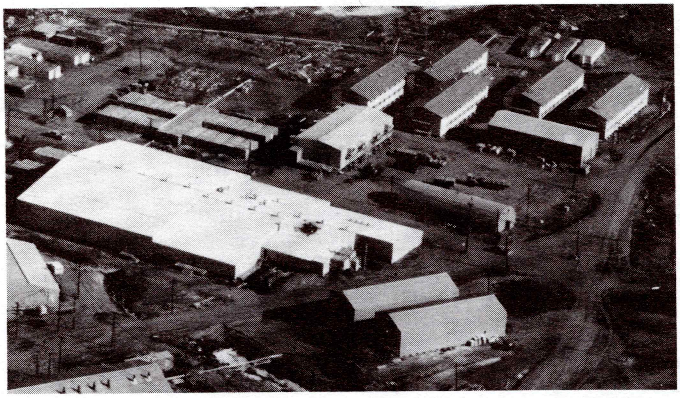


U.S STATIONS

Only recently have permanent stations been established so people can live and work in relative comfort. After more than 25 years of scientific investigation, Antarctica remains the least known continent on our planet.

The United States operates three year-round stations in Antarctica, and establishes a number of field camps during the austral summer season. The largest is McMurdo Station. The other stations are Amundson-Scott South Pole Station, Palmer Station, Byrd Surface Camp, and Siple Station. Siple Station was closed in February of 1984 with plans to reopen in the future as a summer season activity.





MCMURDO

Located on Ross Island in the shadow of Mt. Erebus, the continent's only active volcano, McMurdo Station is the largest facility. Constructed in 1955 as a staging base for inland research projects, McMurdo was not used for scientific research until after the International Geophysical Year, 1957. Today McMurdo serves as the base for all air operations and is the most southern port for ship resupply on the continent.

Scientific programs at McMurdo include earth sciences, biology, glaciology, oceanography, geology and the study of cosmic radiation and satellite movements. McMurdo is also the "clearing house" for supplies destined for use by U. S. scientists on the continent.

In contrast to a summer population which can reach 1,200, McMurdo's winter contingent averages about 90 Navy, civilian and scientific members.

AMUNDSEN/SCOTT-
SOUTH POLE STATION

Located 850 miles inland from McMurdo at the geographic south pole, and accessible only by air, is the Amundson-Scott South Pole Station. Dedicated in January 1975, the station is under a large geodesic dome. Inside the complex, smaller buildings house the living and working spaces for scientists carrying out research on glaciology, geophysics, meteorology, upper atmosphere physics, astronomy, and bio-medical studies at the bottom of the world. During the winter months the dome is home to 19 scientists and support personnel while the summer community expands to as many as 70 people.

SIPLE STATION

This small scientific station, staffed by civilians and one U.S. Navy Hospital Corpsman, is located near the base of the Antarctic Peninsula. Built in December 1970, the original Siple Station was designed for use only in the summer season, but in 1972 a new station was erected and staffed for full time operations.

Among Siple's many science projects is the transmission of Very Low Frequency (VLF) signals over a 26 mile long antenna.

These signals have successfully pulsed the magnetosphere and have been recorded at a conjugate station in Roberval, Quebec.

PALMER STATION

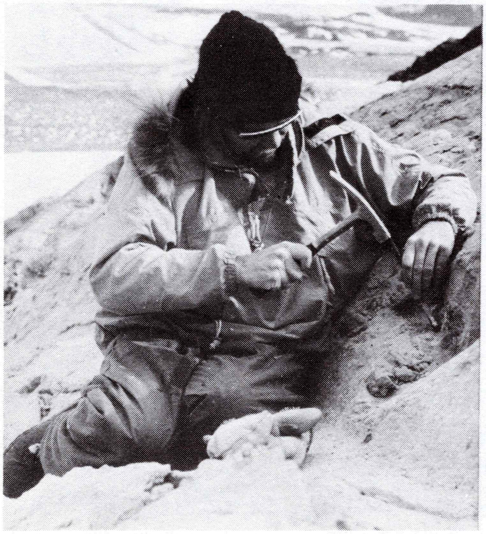
Palmer Station was built on the rocks of Anvers Island along the west coast of the Antarctic Peninsula in 1965. Three years later Palmer II was dedicated near Bonaparte Point, 1.2 miles away, across Arthur Harbor.

Palmer is the land-based half of a research team which works in close alliance with the Research Vessel Polar Duke. RV Polar Duke, a 125-foot trawler, was modified to study the areas around the Antarctic Peninsula which are inaccessible to larger ships.

NATIONAL SCIENCE FOUNDATION

The United States Antarctic Research Program (USARP), is managed and funded by the National Science Foundation, an independent agency of the Federal Government with headquarters in Washington, D.C.

USARP is designed to foster research on worldwide and regional problems of current scientific importance, including environmental monitoring and resources research. Attention is given to maintaining the Antarctic Treaty and ensuring that the continent is used for peaceful purposes.



U.S. NAVAL SUPPORT

The U.S. Naval Support Force, Antarctica (NSFA), headquartered at the U.S. Naval Construction Battalion Center, Port Hueneme, California maintains an active and influential United States presence in Antarctica and provides logistic support for activities on the Antarctic Continent.

This complex and challenging task is labeled "Operation Deep Freeze" by the Navy. Each year the operation involves shipping thousands of tons of cargo, and coordinating the transportation of hundreds of scientific and support personnel to and from Antarctica, many to isolated research sites around the continent.

In October, the command departs for Antarctica. After a brief stopover in Christchurch, New Zealand, the men and women "hit the ice" to commence around-the-clock operations during the austral summer season. NSFA provides communications facilities, weather information services, air traffic control services, air and surface operations in logistic

FORCE, ANTARCTICA

and scientific missions, coordination of ice-breakers and transport ship operations, winter-over operations and other specialized support services.

The Commander of the Naval Support Force determines the feasibility, and ensures the success and safety, of Antarctic operations. He exercises operational command of 2,000 military personnel from units of the Navy, Army, Air Force, Coast Guard, and the Military Sealift Command; he also serves as the senior U.S. military representative in Antarctica.

The Naval Support Force is organized into seven departments and two detachments. The departments are Administration, Communications, Operations, Supply, Public Works, Medical and Terminal Operations.

The two detachments are Detachment McMurdo and Detachment Christchurch.

VXE-6

Antarctic Development Squadron Six (VXE-6), is the U.S. Navy's air arm of "Operation Deep Freeze." VXE-6 aircraft fly to Williams Field at McMurdo from their permanent home at the Naval Air Station, Point Mugu, California. From there, using an ice runway and a snow-covered skiway, the squadron flies to all corners of the frozen continent to support programs of Antarctic Treaty nations including Russia, France, New Zealand, England, Japan and Australia.

Transporting scientists and supplies across that huge polar desert is no easy task. To complete this demanding mission, the squadron operates seven LC-130 Hercules aircraft and six UH-1N helicopters, which provide the flexibility and range of operations that give researchers access to virtually any area.

VXE-6 also has a para-rescue team which made an historic Christmas Eve jump at the South Pole Station in 1973.

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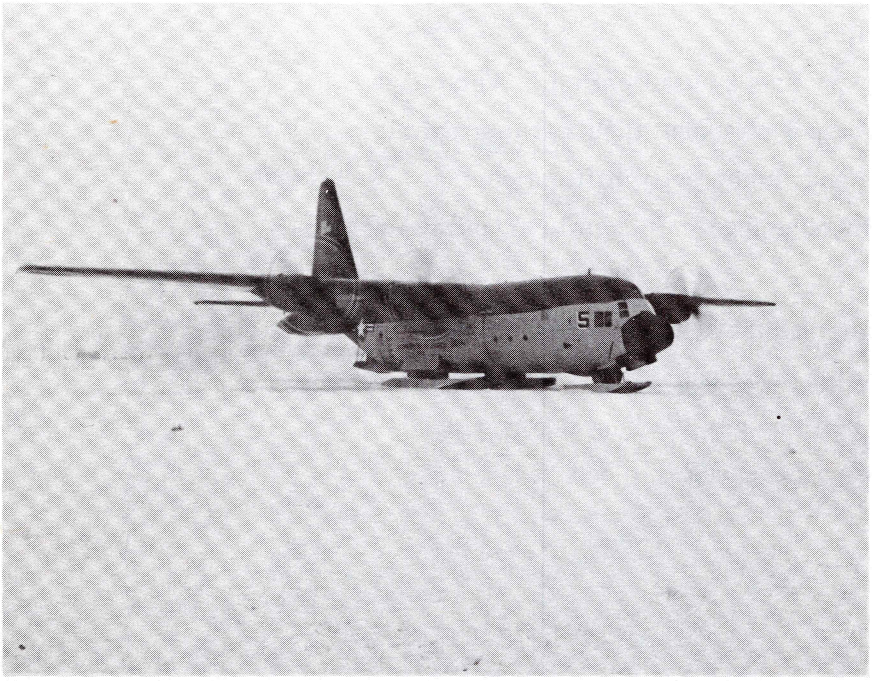

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DET MCMURDO

Detachment McMurdo (Det McMurdo) exists from the close of the austral summer operating season, usually late February, until the beginning of the next austral summer, usually early October.

Det McMurdo is the Antarctic winter-over unit of the Naval Support Force, Antarctica. Personnel ordered to this detachment are assigned temporarily to NSFA in Port Hueneme for medical and psychological screening, training and familiarization.

Det McMurdo personnel are transported to Antarctica during regular Deep Freeze deployment flights. Upon arrival in Antarctica, officers and senior petty officers contact their counterparts in the outgoing Det McMurdo organization for indoctrination.

The detachment maintains McMurdo Station and keeps it operational for the next austral season. They perform maintenance on berthing and working spaces, trucks, heavy equipment and do other special projects.

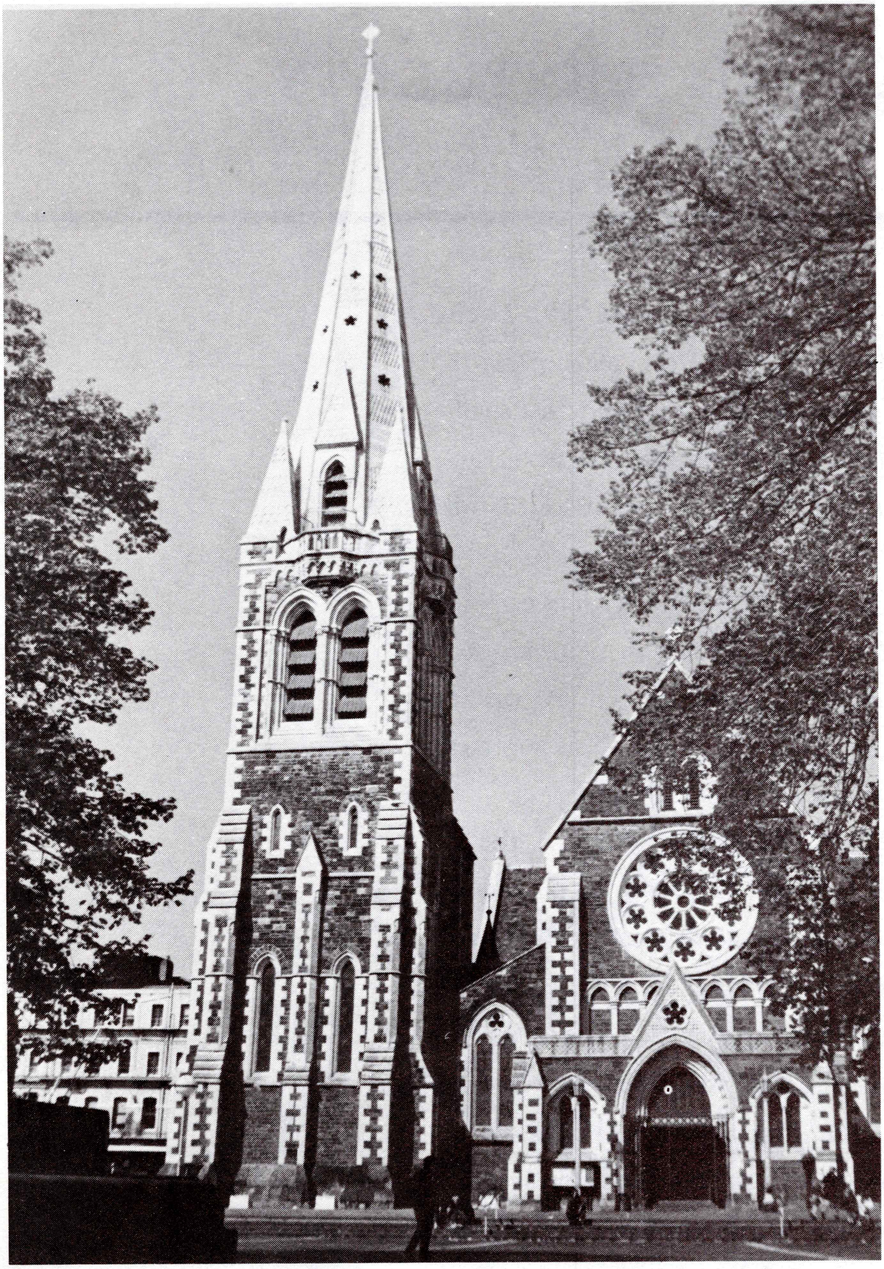
Each year members of the United States winter over party spend seven days enjoying the warm summer climate of New Zealand before settling in for their long and arduous winter tasks. Many of the sailors eagerly participate in "Project Kia Ora," a program established by the U.S. Navy through the cooperation of the New Zealand people and coordinated through NSFA's Det Cristchurch. "Kia Ora" is the Maori (native New Zealander) word for "welcome." Those participating in "Kia Ora" are placed in homes of New Zealanders who share similar interests. Many have taken advantage of the program to learn more about the daily life of the New Zealand people and to share with the "kiwis" some of their American Culture.

DET CHRISTCHURCH

The second detachment of the U.S. Naval Support Force, Antarctica, is Detachment Christchurch (Det Christchurch). They maintain a small complex in New Zealand, to provide a cargo and personnel staging area for the Antarctic program.

During the summer season, additional military personnel are temporarily assigned to Det Christchurch to assist with the increased work load.

Many of Deep Freeze's personnel passing through Christchurch volunteer their time and talents to assist Det Christchurch with their programs involving local children's homes and orphanages. These men and women have raised thousands of dollars and contributed hundreds of hours of work over the years to help these community projects.



ANTARCTIC TREATY

The Antarctic Treaty was written in 1959. Twelve nations originally ratified the treaty, ". . .recognizing that it is in the interest of all mankind that Antarctica shall continue forever to be used exclusively for peaceful purposes and shall not become the scene or object of international discord."

Any measures of a military nature such as establishing military bases or holding military maneuvers are strictly prohibited. However, the treaty does permit the use of military personnel and equipment as support for scientific research or for any peaceful purposes.

Perhaps the most interesting aspect of the Antarctic Treaty is the fact that it is working. Without any provisions for policing or military enforcement, the treaty is being honored.

When the treaty was signed in 1961, twelve nations acceded to its provisions and many more have since acceded oı have been accorded consultation status. All nations involved in scientific research on the continent share information, equipment, people and ideas for the mutual benefit of all in a never-ending quest for knowledge.

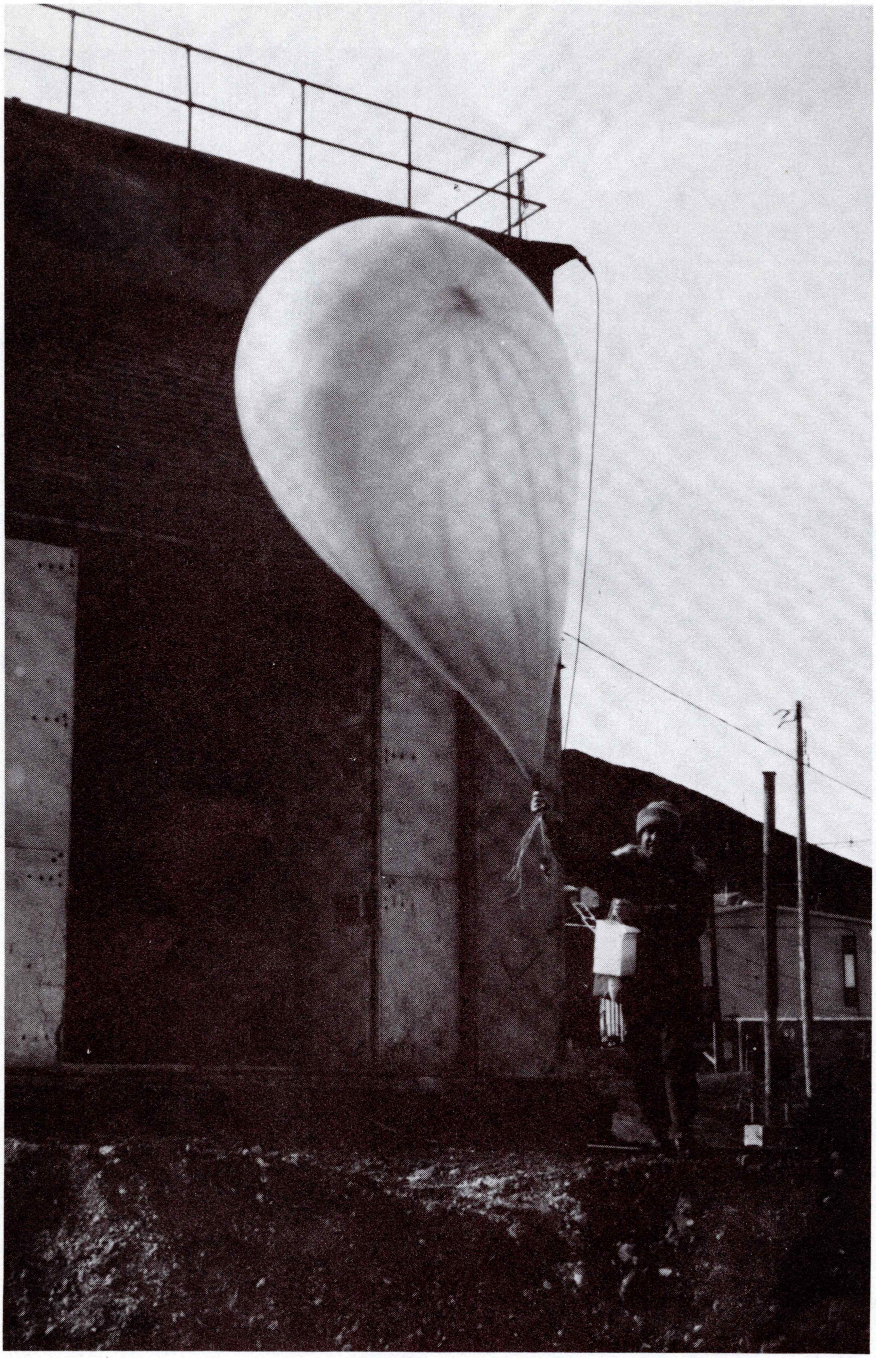
As a direct result of the Antarctic Treaty, people of the world have come a long way toward achieving the fervent hope of Rear Admiral Richard E. Byrd, one of Antarctica's most avid explorers:

". . . Antarctica, in its symbolic robe of white, will shine forth as a continent of peace as nations working together there in the cause of science set an example of international cooperation."

NEW ZEALAND-US COOPERATION

New Zealand traditionally has been the jumping-off point for U.S. expeditions to Antarctica. U.S. Air Force C-141 Starlifter aircraft fly men and women of the United States and New Zealand scientific programs to the ice during the earliest part of the operational season. Once on the ice, people and supplies are routed to their destinations. A small group of New Zealand Army cargo specialists work with members of the Deep Freeze Terminal Operations Department, both in New Zealand and in the Antarctic, to transport people and supplies.

During the earlier part of the austral season, while the surface of the annual ice runway is still firm, C-130 Hercules aircraft from the Royal New Zealand Air Force (RNZAF) fly several "Ice Cube" flights, carrying both people and supplies for U.S. and New Zealand programs. Cargo for the New Zealand Antarctic Research Program (NZARP), headquartered at New Zealand's Scott Base about three miles from McMurdo, is carried on the ships of the U.S. Military Sealift Command which loads cargo at Lyttelton Harbor. By mid-January these ships begin to arrive in Winter Quarters Bay at McMurdo.



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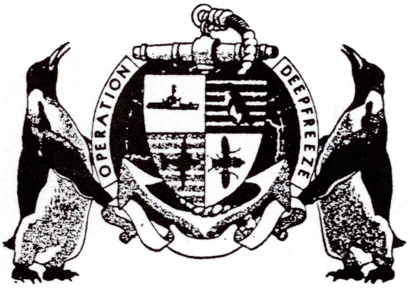
ALL PHOTOGRAPHS ARE OFFICIAL U.S. NAVY PHOTOGRAPHS.

COVER: An ice cave near McMurdo Sound
PAGE 5: Navy Petty Officer in cold weather clothing
PAGE 7: TOP; Emperor penguins near Williams Field
MIDDLE; Adelie penguins on ice floes in McMurdo Sound
BOTTOM: A Weddel Seal pup
PAGE 9: McMurdo Station, Antarctica
PAGE 11: South Pole Station, Antarctica
PAGE 12: A scientist gathers rock samples in the Bunger Hills
PAGE 13: A scientist traverses a glacier
PAGE 17: TOP; A UH-1N "Huey" helicopter
PAGE 17: BOTTOM; A ski-equipped C-130 Hercules aircraft
PAGE 19: McMurdo Station at the onset of winter
PAGE 21: Christchurch Cathedral, Christchurch, New Zealand
PAGE 25: New Zealanders gather in the rear of a Hercules at Christchurch airport
PAGE 26: Releasing a radiosonde attached to a weather balloon at McMurdo Station
PAGE 27: TOP; Loading cargo into a C-130 Hercules
BOTTOM; Navy Seabees construct a fence at McMurdo


OPERATION DEEPFREEZE

DEPARTMENT OF THE NAVY
US NAVAL SUPPORT FORCE, ANTARCTICA